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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/640,155	08/16/2000	Akio Sakura	8481-033	5433

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EXAMINER

GUHARAY, KARABI

ART UNIT PAPER NUMBER

2879

DATE MAILED: 09/03/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/640,155

Applicant(s)

SAKURA, AKIO

Examiner

Karabi Guharay

Art Unit

2879

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-9 and 11 is/are allowed.
- 6) ☒ Claim(s) 10 and 12-15 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

Art Unit: 2879

Amendment A, filed on 18 June 2003 has been considered and entered.

Claims 10, & 13 are amended.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 10, and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over the admitted prior art as described on pages 1-3 in the background section of the instant specification.

Referring to claim 10, the admitted prior art includes a method for making a spark plug including a center electrode, an insulator, a metal shell, and a ground electrode extends in an axial direction from the metallic shell (see page 3, lines 3-7), the method including the steps of making a metal shell and joining the ground electrode (see page 3, lines 3-7), forming a zinc-based plating layer excluding the free-end portion of the ground electrode by covering free end portion with a rubber tube, forming a zinc base plating layer comprising an axial end face adjacent to free end and subjecting the zinc-based layer to chromate treatment, immersing the entire metal shell which has undergone the step of forming the zinc based plate layer in a chromate treatment liquid for forming the chromate layer, it is the position of the examiner that it would have been obvious that the prior art method of forming chromate layer will cover the zinc based layer including the axial end face of the zinc plating since chromate liquid will be drawn

into the rubber tube (the gap between rubber tube and the ground electrode) covered end by capillary action.

Referring to claim 12, the admitted prior art includes a method for making a spark plug wherein the ground electrode is a Fe-based alloy (see page 1, lines 17, 18).

Claims 13-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over the admitted prior art as described on pages 1-3 in the background section of the instant specification in view of Takamura et al.

Referring to claims 13 and 15, the admitted prior art discloses a spark plug including a center electrode, an insulator, a metal shell, and a ground electrode (see page 1, lines 8-14) formed a Fe-based alloy (see page 1, lines 17, 18) and a Pt-based metal chip. The admitted prior art does not include a diffusion layer having a thickness greater than 10 microns. Takamura et al. disclose a ground electrode including a Pt-base chip and including a diffusion layer having a thickness greater than 10 microns so as to avoid rupture (see abstract). It would have been obvious to include a diffusion layer having a thickness greater than 10 microns, as disclosed by Takamura et al., in the spark plug, as disclosed in the prior art, so as to avoid rupture.

Claim 14 is broader than claim 13. Consequently, it is rejected for the same reason as claim 13.

Allowable Subject Matter

Claims 1-9, and 11 are allowed over the prior art of record.

The following is an examiner's statement of reasons for allowance:

The prior art of record neither shows nor suggests a method for manufacturing a spark plug including the steps of forming a metallic shell assembly having a ground

Art Unit: 2879

electrode, forming a zinc-based plating layer on the entire surface of the metallic shell assembly, removing the zinc-based plating layer from the free-end portion of the ground electrode, and welding a chip of a high melting point metal to the free-end portion of the ground electrode. The subject method ensures a clean weld between the chip and the ground electrode in spark plugs having a zinc-based coating.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Response to Arguments

Applicant's arguments filed on 18 June 2003 have been fully considered but they are not persuasive.

Regarding claim 10 & 13-14. applicant argues that the conventional method where rubber tube is attached to the free end of the ground electrode and zinc-plating layer is formed on the rest of the ground electrode including metallic shell assembly, the axial end face of zinc plated layer adjacent to the free end will not be covered by chromate layer.

However, examiner respectfully disagrees, because when the rubber tube is attached to the free end of the ground electrode, however, sealing of the free end is not perfect there is a finite gap between the rubber tube and the ground electrode. Thus when the rest of the ground electrode having zinc-plating layer is immersed in a chromate bath liquid, liquid will seep in the gap between rubber tube and the ground

Art Unit: 2879

electrode. Even if the gap is very small liquid will drawn into the gap by capillary action of the liquid thus covering the axial end face of the zinc-plated layer adjacent to the beginning of the rubber tube cover area of the ground electrode.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Karabi Guharay whose telephone number is (703) 305-1971. The examiner can normally be reached on Monday-Friday 8:30 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimeshkumar D. Patel can be reached on (703) 305-4794. The fax phone number for the organization is (703) 308-7382.

Art Unit: 2879

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

K.G.
Karabi Guharay
Patent Examiner
Art Unit 2879


VIP PATEL
PRIMARY EXAMINER